

548,403

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
30 September 2004 (30.09.2004)

PCT

(10) International Publication Number  
**WO 2004/082397 A1**

(51) International Patent Classification<sup>7</sup>: **A23J 1/20**,  
1/08, B01D 15/08

(21) International Application Number:  
PCT/DK2004/000187

(22) International Filing Date: 19 March 2004 (19.03.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
PA 2003 00443 21 March 2003 (21.03.2003) DK

(71) Applicant (for all designated States except US): **UP-  
FRONT CHROMATOGRAPHY A/S** [DK/DK]; Lersø  
Parkallé 42, DK-2100 Copenhagen Ø (DK).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **HANSEN, Marie**,  
Bendix [DK/DK]; Nivådal 125, DK-2990 Nivå (DK).  
**LIHME, Allan, Otto, Fog** [DK/DK]; Furesøbakken 13,  
DK-3460 Birkerød (DK).

(74) Agent: **PLOUGMANN & VINGTOFT A/S**; Sundkrogs-  
gade 9, P.O. Box 831, DK-2100 Copenhagen Ø (DK).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), Euro-  
pean (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR,  
GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK,  
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,  
ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: METHOD FOR HIGH THROUGHPUT VOLUMES IN THE FRACTIONATION OF BIO-MOLECULES BY CHRO-  
MATOGRAPHIC SYSTEMS

(57) Abstract: The present invention provides industrial scale expanded bed adsorption process for fractionation and isolation of  
bio-molecules from fluids, preferably proteins from milk and whey, in a cost-effective manner. This is accomplished by operating  
the expanded bed column at high temperatures of at least 40°C, combined with applying flow rates greater than 1.500 cm/hour.

WO 2004/082397 A1